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Our study of the terns was simply one of many illustrations of the wonderful changes of bird distribution brought about by the magic touch of water on what was once a dry, arid prairie.



Fig. 29. CLOSER VIEW OF BLACK TERN'S NEST SHOWING DETAILS OF CONSTRUCTION

SUMMER BIRDS OF WILLOW CREEK VALLEY, MALHEUR COUNTY, OREGON

By MORTON E. PECK

DURING the past summer (1910), the writer spent several weeks, that is, from June 22 to July 25, at Brogan, Malheur County, Oregon. Brogan is as yet a town-site rather than a town, but it promises a considerable growth, as the result of the execution of an extensive irrigating project. It lies in the valley of Willow Creek, twenty-five miles northwest of the town of Vale, about fourteen miles from the Idaho line, one hundred and fifty from the southern boundary of the state, and a little less from the northern.

The study of birds not being the primary object of the visit, only a small amount of territory was covered, though this was looked over with considerable care. Some five miles of the valley of Willow Creek were gone over repeatedly, a trip of about eighteen miles was made up the canyon of the creek, two or three smaller tributary canyons were explored for several miles and visited on two or more occasions, and the sage-brush-covered hills were gone over for four or five miles in various directions from Brogan.

Willow Creek Valley proper begins about two miles above Brogan, where the

stream, which flows in a southeasterly direction, issues from a narrow canyon into a broad drainage basin, from one to several miles in width, with a flood-plain half a mile or more wide. It should be explained, however, that the entire creek is now taken up and held in reservoirs for irrigation. On the north side the land rises by a steep, continuous slope for a distance of several hundred to perhaps a thousand feet, but on the south a series of low hills leads gradually up from the flood-plain to the rim of the valley. Besides the main canyon two or three small tributary canyons enter the valley within the limits covered by our observations; only one of these, however, contains a permanent stream. This is known as Pole Creek, and is very small, in fact quite disappearing in places, where it sinks among the rocks and sand of its bed. The main canyon is from one to several hundred yards in width, with steep, often precipitous walls.

So far as the vegetation of the region is concerned, the flood-plain association of plants is of course sharply marked off from that of the upland or sage-brush section. The former consists largely of a tall rank grass (*Elymus condensatus*), known as rye-grass, together with other grasses, sedges, and rushes, and where the soil is strongly alkaline, of various halophytic species. Certain tall weeds, especially the common sunflower (*Helianthus annuus*) also abound. Along the immediate bank of the creek there is a more or less continuous belt of willow thickets, consisting mainly of shrubby species, commonly not much over fifteen feet in height, but frequently forming a very dense growth. At Brogan, however, there is a tract of some fifteen or twenty acres of what may be designated timber, consisting wholly of willow trees, some of which reach a height of thirty or forty feet and a diameter of twelve or fifteen inches. Among the trees is a dense tangled undergrowth of red osiers, rose bushes and other shrubs, with various rank weeds, especially thistles and nettles, forming all together an almost impenetrable jungle.

In the canyons are considerable thickets of willow, some shrubby birches (*Betula microphylla*), occasional small shad-berry trees (*Amelanchier cusickii*?), and also alders and chokecherries, and numerous clumps of cottonwood (*Populus angustifolia*), the trees sometimes sixteen inches in diameter. Excepting these narrow canyons and the flood-plain of Willow Creek, the whole area over which our observations extended is an almost uninterrupted waste of sage-brush and such other xerophytes as usually accompany it.

It is needless to say that the character of the vegetation constitutes the dominant factor in determining the avian life in each of the sections above indicated. In the flood-plain area birds were not, in general, remarkably plentiful; however, the bit of willow timber displayed an abundance of individuals and variety of species rarely seen surpassed in any section of equal extent. Some idea may be gained of the richness of this locality from an examination of the list which follows. The chief requirements, protection from enemies and from the elements, and an abundant food supply, were here to be met with as nowhere else for miles around. Insects appeared to be remarkably plentiful; one would scarcely find them more so in a tropical forest.

This lower portion of the valley has been in ranches for many years, and a considerable part of it is devoted to alfalfa raising. About the ranch houses are considerable orchards and shrubbery and tall Lombardy poplars, forming a favorite resort for a number of species, which were here found in great abundance. Furthermore, large numbers of Fringillidae were noted in the extensive patches of sunflowers, the seeds of which, when in season, probably formed their principal food. In Willow Creek Canyon birds were found in only moderate numbers, but in the little canyon of Pole Creek both species and individuals were abundant.

The avian life of the dry, sage-brush-covered hills appeared to be in general rather plentiful, though the almost perfect uniformity of conditions would naturally bring the number of species inhabiting this section within narrow limits. The birds of the sage-brush were found to be for the most part very shy,—a result, doubtless, of the continual watchfulness against enemies demanded by the unprotecting nature of their environment.

Aside from the planting of trees on the ranches already mentioned, human agency has to some extent modified the distribution of summer birds in the region under consideration by the construction of reservoirs and irrigation ditches. There are three of these reservoirs, numbered respectively "1", "2", and "3". No. 1 is about two miles from Brogan and some distance to the westward of Willow Creek; No. 3 is in Willow Creek Canyon about eighteen miles above Brogan. Probably several species included in the present list would not have been met with but for the presence of these reservoirs.

1. **Anas platyrhynchos.** Mallard. Four Mallards were seen flying over the valley on July 13. On July 21 a considerable flock was met with in Reservoir No. 1, and the following day several were startled from an irrigating ditch. It is not at all likely that any of these birds had nested in the neighborhood. They were probably wanderers from Lake Malheur or some of the other lakes to the southwestward.

2. **Querquedula cyanoptera.** Cinnamon Teal. A female accompanied by eight very young birds was seen in an irrigating ditch June 28. The parent bird had a broken wing. Near the same place, on July 20, a female and two nearly grown young were observed, and on the following day a considerable flock was seen in Reservoir No. 1. The flock were probably of new arrivals from some other locality.

3. **Ardea h. herodias.** Great Blue Heron. On July 13 a Great Blue Heron was flushed from an irrigation ditch.

4. **Nycticorax n. naevius.** Black-crowned Night Heron. Three specimens were seen flying over the valley on June 24, and on June 29 one was startled from a thicket along Willow Creek. It is likely that a few pair nested in the bit of willow timber near Brogan.

5. **Fulica americana.** Coot. Two Coots were noted in Reservoir No. 1, on July 21.

6. **Lobipes lobatus.** Northern Phalarope. A small flock was noted about Reservoir No. 1, on July 21, and others the following day. One specimen was secured.

7. **Steganopus tricolor.** Wilson Phalarope. A small flock was seen at Reservoir No. 1, July 21.

8. **Gallinago delicata.** Wilson Snipe. On July 8 a Wilson Snipe was flushed from the sage brush! A second specimen was seen in a bog near Reservoir No. 3, on July 10.

9. **Actitis macularius.** Spotted Sandpiper. A pair of Spotted Sandpipers, evidently nesting, were seen at Reservoir No. 1, on July 1. They were observed repeatedly alighting in the tops of the sage brush.

10. **Oxyechus vociferus.** Killdeer. Very abundant along irrigating ditches and about Reservoir No. 1. A female with four half-grown young was noted in Pole Creek Canyon July 16.

11. **Colinus v. virginianus.** Bobwhite. Bobwhites were heard frequently about Brogan, but apparently they are not common.

12. **Centrocercus urophasianus.** Sage Hen. Large numbers of Sage Grouse were observed from time to time and several specimens were secured. About the

middle of July young birds from one-third to nearly full grown were met with. There were usually from five to seven young in a flock. Their hunting at this time of year could offer little sport, as they were almost as tame as domestic fowls. The specimens taken had their crops filled with leaves and young shoots of sage brush and other rank desert plants, but nevertheless they proved excellent table birds.

13. *Zenaidura m. carolinensis*. Mourning Dove. Very abundant, frequenting the sage brush and rocky cliffs by thousands, as well as the willow timber and thickets. It was always most plentiful in the neighborhood of water. Numerous nests were found. In the sage brush they were almost invariably on the ground; in the timber and thickets they were in bushes or even well up in the trees.

14. *Cathartes a. septentrionalis*. Turkey Vulture. Turkey Vultures were very common and seen daily. Good sized flocks were occasionally noted hovering about the "rim-rock" above the valley. They were doubtless nesting here, as a specimen was one day seen to alight and disappear among the rocks.

15. *Circus hudsonius*. Marsh Hawk. A Marsh Hawk was seen on the wing, June 24. A female was killed at Brogan while in the act of carrying away a young chicken.

16. *Buteo b. calurus*. Western Red-tail. A specimen was seen hovering about the cliffs of Willow Creek Canyon, July 7. A few days later a specimen was taken in the willow timber. On July 19 a nest was found near the same place. It was in a willow tree, thirty feet from the ground. There were two young birds, one looking over the edge of the nest, and the other perched beside it.

17. *Falco mexicanus*. Prairie Falcon. Four or five specimens were noted in Willow Creek Canyon, July 10, and another a few days later along Pole Creek.

18. *Falco s. sparverius*. Sparrow Hawk. Sparrow Hawks were very plentiful, especially along watercourses, where specimens were seen daily. Probably the nests were usually in Flickers' holes in perpendicular banks.

19. *Asio wilsonianus*. Long-eared Owl. On two or three occasions adult specimens were observed in the willow timber. July 23, four grown young were flushed in the same locality. They were all sitting close together, but scattered when alarmed.

20. *Otus a. macfarlanei*. MacFarlane Screech Owl. A bird of the year was taken in a willow thicket in Pole Creek Canyon, July 15. Much careful search failed to bring another specimen to light.

21. *Bubo v. pacificus*. Pacific Horned Owl. A young bird, with much down still upon it, was taken among some low trees in Pole Creek Canyon, July 19. When this specimen was shot another, evidently also young, flew from a near-by tree. They must have been reared near the spot, and probably on the flattened top of an old Magpie's nest, several of which were noted in the immediate neighborhood.

22. *Speotyto c. hypogaea*. Burrowing Owl. I was informed that Burrowing Owls had been very plentiful about Brogan earlier in the season, but only a single specimen was seen, June 22.

23. *Coccyzus a. occidentalis*. California Cuckoo. One specimen was seen in the willow timber, July 6.

24. *Dryobates p. homorus*. Batchelder Woodpecker. A single specimen, probably representing this subspecies, was met with in the willow timber, July 14.

25. *Asyndesmus lewisi*. Lewis Woodpecker. A pair of Lewis Woodpeckers were seen near a ranch house, July 9. There were tall Lombardy poplar trees

about the house, where they were probably nesting. On the following day two others were seen some miles up Willow Creek Canyon.

26. *Colaptes c. collaris*. Red-shafted Flicker. Very common along streams, and often seen well out in the sage brush. The perpendicular banks of streams form the usual nesting sites. Two or three nests were found and numerous unoccupied holes noted. One nest was examined June 29, and contained four young birds. The bank had caved a little, so that the heads of the nestlings could be seen from below their level. Only three or four woodpecker's holes were found in trees. One of these had been recently made, and evidently by a Flicker. It seems, therefore, that however long they have been nesting in banks, they will, when opportunity offers, return to their ordinary nesting site. They feed largely on the ground and in low bushes, thus being quite independent of trees.

27. *Phalaenoptilus n. nuttalli*. Nuttall Poor-will. A specimen was seen in the sage brush near Brogan, June 24, and the next day apparently the same bird was taken. One evening on coming in at dusk, one of these birds was flushed, evidently a female with a nest near by. It hovered about me repeatedly, sometimes at a distance of only a few feet, occasionally uttering a low, plaintive cry. I was told that the species had been very plentiful in the spring, but no other specimens were met with.

28. *Chordeiles v. henryi*. Western Nighthawk. Seen daily in large numbers. While found mainly in the sage brush, specimens were seen in willow trees during the day. Several nests were found.

29. *Selasphorus rufus*. Rufous Hummingbird. A Hummingbird was seen in Willow Creek Canyon, July 10, and another in Pole Creek Canyon on the following day.

30. *Tyrannus t. tyrannus*. Eastern Kingbird. Kingbirds did not appear to be very common, though several pair were noted. None were seen in the sage brush, and they probably nest only in the lower portions of the valley.

31. *Tyrannus verticalis*. Western Kingbird. Very plentiful, especially about houses where trees have been planted.

32. *Sayornis sayus*. Say Phoebe. Some half-dozen specimens of this species were seen in all. June 25 an immature bird was killed. All were in the sage brush.

33. *Empidonax d. difficilis*. Western Flycatcher. Moderately plentiful in the willow timber. A nest with four eggs was found June 28.

34. *Empidonax wrighti*. Wright Flycatcher. A pair of these flycatchers were seen in the sage brush, June 29, a second pair July 8, and some days later at least one other pair. No specimens were secured, as they were extremely shy.

35. *Otocoris a. merrilli*. Dusky Horned Lark. A single Horned Lark, probably referable to this subspecies, was seen in the sage brush near Brogan, July 25.

36. *Pica p. hudsonia*. American Magpie. Abundant and seen nearly every day. Some of the nests noted were along dry watercourses in willow bushes not more than two or three feet from the ground.

37. *Corvus c. sinuatus*. Western Raven. Ravens were occasionally observed flying over the valley, but were seldom seen to alight. They were found in much larger numbers some miles up the canyons.

38. *Corvus b. hesperis*. Western Crow. Moderately common along watercourses wherever there are trees.

39. *Dolichonyx oryzivorus*. Bobolink. On July 12, a pair of Bobolinks with a barely fledged young bird were seen in a low meadow near Brogan. On the fol-

lowing day the same pair were again observed accompanied by four or five young.

40. *Molothrus ater*. Cowbird. In the willow timber on July 12, a Yellow Warbler was observed feeding a young Cowbird. The specimen was secured. A few days later, in the same locality, a Redstart was seen feeding another full grown bird of the same species. An adult male, one of a small flock that was following a drove of horses, was killed near Brogan, July 17.

41. *Agelaius tricolor*. Tri-colored Blackbird. There was a considerable breeding colony of this species in a swampy area along the creek near Brogan, but about July 3 they all disappeared. Later numerous specimens were seen, apparently wandering.

42. *Sturnella neglecta*. Western Meadowlark. Abundant everywhere in the sage brush. Always very shy.

43. *Icterus bullocki*. Bullock Oriole. Very plentiful along watercourses and even far out in the sage brush. Several old nests were found in willows and other shrubs, some within a few feet of the ground.

44. *Euphagus cyanocephalus*. Brewer Blackbird. Abundant; usually seen in small flocks along irrigating ditches, and sometimes in the sage brush.

45. *Carpodacus m. frontalis*. California Linnet. Observed now and then in small numbers in low parts of the valley in willow thickets and on sunflowers.

46. *Astragalinus t. pallidus*. Pallid Goldfinch. Plentiful in the lower parts of the valley. It was most frequently noted along irrigation ditches and on cultivated ground.

47. *Poocetes g. confinis*. Western Vesper Sparrow. Quite plentiful in the sage brush, usually loosely associated with other sparrows.

48. *Chondestes g. strigatus*. Western Lark Sparrow. Another species of the sage brush; the most abundant bird, perhaps, of the section.

49. *Spizella breweri*. Brewer Sparrow. Very plentiful in the sage brush. It was usually found in rather large companies, often associated with other Fringillidae, especially when coming to the bottom lands to feed on sunflower seeds.

50. *Amphispiza n. nevadensis*. Nevada Sage Sparrow. Abundant in the sage brush, commonly in scattered flocks.

51. *Melospiza m. montana*. Mountain Song Sparrow. Very abundant in the willow timber, where many pairs were making nests up to the middle of July. A few specimens were observed in Pole Creek and Willow Creek Canyons.

52. *Passerella i. schistacea*. Slate-colored Fox Sparrow. A young bird, fully feathered, was taken in the willow timber, July 18. Several others were noted in the same locality on various dates.

53. *Pipilo m. arcticus*. Arctic Towhee. Moderately common in thickets along watercourses. A female was seen feeding young July 15.

54. *Zamelodia melanocephala*. Black-headed Grosbeak. Not scarce in the willow timber and in the larger thickets throughout Willow Creek Canyon.

55. *Passerina amoena*. Lazuli Bunting. Numerous specimens were noted in thickets along watercourses, especially in Willow Creek Canyon, July 9-10.

56. *Passer domesticus*. English Sparrow. Found in considerable numbers about ranches in the valley.

57. *Piranga ludoviciana*. Western Tanager. Two or three specimens were seen in Pole Creek Canyon, July 18, and one in the willow timber the following day.

58. *Hirundo erythrogastra*. Barn Swallow. Seen in considerable numbers after the middle of July.

59. *Stelgidopteryx serripennis*. Rough-winged Swallow. Moderately common and seen almost daily; apparently nesting in the small canyons.
60. *Lanius l. excubitorides*. White-rumped Shrike. Rather common and seen almost every day in the sage brush.
61. *Vireosylva g. swainsoni*. Western Warbling Vireo. A single male, in song, was seen and secured in Pole Creek Canyon, July 19.
62. *Dendroica a. aestiva*. Yellow Warbler. Abundant in the willow timber. Occasionally seen, but not plentiful, in Pole Creek and Willow Creek Canyons.
63. *Geothlypis t. occidentalis*. Western Yellowthroat. On two occasions a Yellowthroat, presumably representing this subspecies, was heard singing in a thicket at the mouth of Willow Creek Canyon.
64. *Icteria v. longicauda*. Long-tailed Chat. Abundant in all the more extensive willow thickets.
65. *Setophaga ruticilla*. Redstart. On June 30 a pair of Redstarts were seen in the willow timber. On July 14 a female was noted feeding a young Cowbird.
66. *Oreoscoptes montanus*. Sage Thrasher. Common in the sage brush and seen nearly every day.
67. *Dumetella carolinensis*. Catbird. A considerable number of Catbirds, both young and mature, were seen in the willow timber, but none were observed elsewhere.
68. *Salpinctes o. obsoletus*. Rock Wren. Plentiful in canyons and other suitable places. Usually found in families, the young being full grown by July 1.
69. *Troglodytes a. parkmani*. Western House Wren. On June 28 a pair of these birds were seen feeding young in the nest; this was in a woodpecker's hole in a small tree in the willow timber. Two or three other specimens were noted in the same locality and one was secured.
70. *Telmatodytes p. plesius*. Western Marsh Wren. One specimen was taken in a willow thicket, July 23.
71. *Sitta canadensis*. Red-breasted Nuthatch. A bird of the year was taken in the willow timber, July 18.
72. *Penthestes a. septentrionalis*. Long-tailed Chickadee. Two or three families were met with in Pole Creek Canyon, July 1, and subsequently as many more in the willow timber, where one specimen was taken.
73. *Hylocichla u. swainsoni*. Olive-backed Thrush. Numerous specimens were seen and two or three taken in the willow timber. Many males were in full song up to the middle of July, and nesting was still apparently going on.
74. *Planesticus m. propinquus*. Western Robin. Robins were moderately common in the willow timber, but none were observed elsewhere.

NESTING OF THE CALIFORNIA CUCKOO IN LOS ANGELES COUNTY, CALIFORNIA

By ANTONIN JAY

WITH THREE PHOTOS

HAVING read with much interest the account in the January CONDOR by Mr. Alfred C. Shelton, of the nesting of the California Cuckoo (*Coccyzus a. occidentalis*) in Sonoma County, and noting that some of its habits in that locality are slightly different from what they are here, I will endeavor to give a